SANTA CLARA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

REPORT

ON

PROPOSED CHANNEL IMPROVEMENTS

ON

GOLF CREEK

ZONE C-1 PROJECT 30 013

6 March 1963

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santa clara county

FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DONALD K. CURRLIN
MANAGER - COUNSEL
70 WEST ROSA STREET
SAN JOSE 10, CALIFORNIA
CYPRESS 9-2031

March 6, 1963

Honorable Board of Supervisors
County of Santa Clara
70 West Rosa Street
San Jose 10, California

Gentlemen:

Transmitted herewith is the Engineer's Report of Proposed Improvements for Golf Creek, Project Number 30 013 in Zone C-1 (Central) of the Santa Clara County Flood Control and Water Conservation District. The report covers proposed improvements for 8,595 feet of channel. The estimated cost of these facilities is $176,350, which can be financed from normal zone taxes.

I recommend that a public hearing on this proposed channel improvement be held as a prerequisite to the construction of the project.

Sincerely,

Donald K. Currlin

Manager-Counsel

SANTA CLARA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

Donald K. Currlin, Manager-Counsel

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ENGINEER'S REPORT
FOR THE IMPROVEMENT OF GOLF CREEK
PROJECT NO. 30013, ZONE C-1 (CENTRAL ZONE)

INTRODUCTION

Golf Creek is a tributary of Alamitos Creek, which in turn is a tributary of the Guadalupe River. It is located in Almaden Valley which is a southeasterly extension of the Santa Clara Valley between the Los Capitancillos Ridge and the Santa Teresa Hills.

Golf Creek has a history of flooding in the lower two miles of its watershed. These floods caused no serious damage as the area was primarily devoted to agricultural pursuits. However, urban development in the area is now rapidly expanding and recurrence of past floods could cause serious damages. This hazard was investigated and it was found possible to alleviate the potential damages by channel improvements. If these channel improvements are undertaken soon, the costs of right-of-way acquirement will be a minimum and the estimated project cost would be $176,350.

This report presents:

1. A general description of the proposed channel improvement, together with plans, profiles, cross-sections and specifications relating thereto.
2. A general description of and maps showing the location of the proposed project and the lands, rights-of-way, and easements required therefor.

3. An estimate of the cost of the proposed project, and means of financing these costs.

DESCRIPTION OF WATERSHED

The headwaters of Golf Creek are on the northeasterly slopes of the Los Capitancillos Ridge. The creek flows northerly from the steep hill sides of the ridge through the smooth slope of foothills and across the flat Almaden Valley to Alamitos Creek. The slope of the terrain along the upper reaches is so steep that significant residential development is unlikely. Medium density residential with scattered commercial areas is developing along the lower reaches of Golf Creek from about the 500-foot contour to Alamitos Creek. The beauty of the area and higher land costs tends to encourage the construction of residences that are above the medium price class. A portion of the Almaden Golf Course also lies within the Golf Creek watershed.

DESIGN CRITERIA

The criteria used in the preliminary design of structures, channels and grades for the Golf Creek project are:

Level of protection provided (design storm):

Open Channels	50-year frequency
Closed Conduits	50-year frequency

Roughness Coefficients (Manning):

Concrete Drop Structures and Culverts	n = 0.015
Earth Channel	n = 0.030

Freeboard with Subcritical Velocity in Earth Channel:

One foot with no levees
Two feet when in levees

Maximum Velocity in Earth Channel: 8 fps

A method for computing the peak flood flow to be expected from small watersheds has been developed that is applicable to areas in Santa Clara County. The intensity of rainfall in the watershed under consideration is determined by special adjustments to rainfall intensities derived from San Jose rainfall intensity-frequency-duration curves. The resulting calculated peak flood flows at each of several key points along Golf Creek are presented in Table 1.

TABLE 1

PEAK FLOWS FOR DESIGN STORM - GOLF CREEK

Main Branch

Station	Location	Watershed Area in Acres	Peak Flow in Cubic ft./sec.
85+35	End of Project	695	514
68+00	Main Branch above Confluence	725	529
67+00	Confluence with W. Branch	1,204	820*
42+80	Culligan Ave. (Downstream)	1,439	911
21+00	Redmond Ave.	2,000	1,060
4+10	Almaden Road	2,135	1,100
	West Branch		
0+00 (=67+38 on Main Branch)	Confluence with Main Branch	479	324

*Design Discharge for Culligan Ave. Culvert

DESCRIPTION OF PROPOSED PROJECT

In the formulation of the Golf Creek channel improvement plan, the alignment selected followed the natural channel wherever possible. This procedure usually results in the least right-of-way costs. The right-of-way required for the proposed project includes sufficient width for the channel, channel structures, adjacent levees where necessary, and a maintenance road along one side of the channel. The plan and profile of the proposed improvement is shown on three plates appended to this report.

The beginning of the project stationing is at the proposed new confluence of Golf Creek with Alamitos Creek. This new confluence is about 3,500 feet upstream on Alamitos Creek from the natural confluence, and is created by the diversion of Golf Creek under Almaden Road where the present channel of Golf Creek turns to follow along the westerly side of Almaden Road. The project stationing is measured upstream from the proposed new confluence.

At the proposed new confluence, it is proposed to construct a concrete sack rip-rap structure to protect the mouth of Golf Creek from erosion. This economical structure will suffice until the proposed channelization of Alamitos Creek is undertaken, at which time a more permanent structure can be constructed.

The previously noted diversion of Golf Creek under Almaden Road shortens the proposed channel improvement of Golf Creek by about 3,500 feet and removes the creek from the vicinity of a major thorough-

fare. The future widening of Almaden Road was considered in the alignment and length of the proposed culvert under the road.

In the upper reaches of the proposed project, the steeper natural channel slopes make it necessary to use drop structures to reduce the velocity of the flood flows and prevent erosion. In all, three concrete drop structures varying in height from 4.5 to 6 feet are included as part of the proposed channel improvement. The channel itself, however, will not be lined.

As previously mentioned, Golf Creek crosses a golf course. Tentative development plans of the owner are that the golf course will be expanded with the fairways separated by groupings of residential lots. The proposed channel improvement project in this reach has been designed with this possibility in mind, and the channel reach south of Dwyer Road could be adjusted from that shown on Plate 4 without interfering with its flood control utility. However, such realignment would be for the developer's convenience and he would be required to bear all excess cost of an approved channel design.

Construction Staging of the Proposed Project

The channel improvement of Golf Creek as proposed would be constructed in five stages. The first portion of the channel to be improved would be the reach from Station 35+25 to Station 54+50 (see Plate 3) in order to coordinate channel construction with adjacent residential development. The developer proposes to construct the channel improvement as proposed herein, with the exception of a

check dam, for that reach under an agreement with the district.

The portion of the channel from Alamden Road to Station 35+25 (see Plates 2 & 3) would be constructed next in order to protect the channel from potential erosion and the adjacent lands from possible flooding as a result of the introduction of additional runoff from the now developing residential area upstream. A check dam would also be constructed at Station 48+00 in order to reduce velocities in the upper portion of the first stage improvements.

The third stage of construction would be the upper reaches of Golf Creek and its tributaries (see Plates 3 & 4) as development in that area requires. The last stage of construction would be the diversion of Golf Creek under Almaden Road to Alamitos Creek (see Plate 2). This stage would be coordinated with the proposed widening of Almaden Road.

Supplementary Construction and Maintenance

In addition to the construction proposed above, it may be necessary to construct, on a maintenance basis, various erosion control facilities in some of the ravines in the upper reaches of the watershed. This construction would reduce the maintenance costs caused by the deposition of silt and detritus in the downstream improved channels and culverts. There is also the possibility that some portions of the upper tributaries of Golf Creek will have to be placed in closed conduits in streets as future urban development occurs.

PROJECT COSTS

Estimates of the costs of construction of the proposed channel improvement on Golf Creek were based on prevailing 1962 prices. In addition to direct construction costs, a contingency item was estimated to account for the costs of right-of-way, engineering, advertising, legal fees, and other incidentals. The estimated costs are presented in Table 2.

TABLE 2

ESTIMATED COSTS OF PROJECT

Stage Number	Station Limits	Construction Cost	Contingency Cost	Total Cost
I	35+25 to 54+50	$ 11,492	$ 1,158	$ 12,650
II	5+00 to 35+25 *	47,595	9,605	57,200
IIIA	54+50 to 69+55	30,260	6,140	36,400
IIIB	69+55 to 85+40	17,860	3,640	21,500
IV	~~0+60 to 0-60~~ 0-60 TO 5+00	26,000	22,600	48,600
		$133,207	$43,143	$176,350

*Includes check dam at Station 48+00

No cost estimates are presently available for the erosion control projects which may be necessary in the upper watershed ravines of Golf Creek. Construction of such erosion control structures can be delayed for a few years after the completion of the channel improvement proposed herein and financed on a maintenance basis.

FINANCING

It is recommended that the proposed Golf Creek channel improvement be financed on a pay-as-you-go basis from ad valorem taxes rather than from a bond issue. The Central Zone had a 1962 assessed valuation of $533,279,960 which, without increasing the tax rate, would provide an adequate source of funds to finance the project as proposed herein as well as the other necessary construction and maintenance activities in the Zone.

CONCLUSIONS AND RECOMMENDATION

As a result of the investigation reported herein, it was concluded that:

1. Golf Creek has historically flooded an area of several hundred acres, but damage was relatively minor since the lands were primarily devoted to agricultural development. However, rapidly expanding urban development threatens to place expensive commercial and residential structures within the potential flood area and recurrence of past floods could result in substantial damage.
2. It is possible to construct channel improvements on Golf Creek that would reduce the hazard of potential floods.
3. The costs of the proposed channel improvement of Golf Creek are estimated to be $176,350.
4. It is possible to stage the construction of the proposed channel improvement of Golf Creek in such a manner that the proposed

project can be constructed out of ad valorem tax revenues without an increase in the basic tax rate.

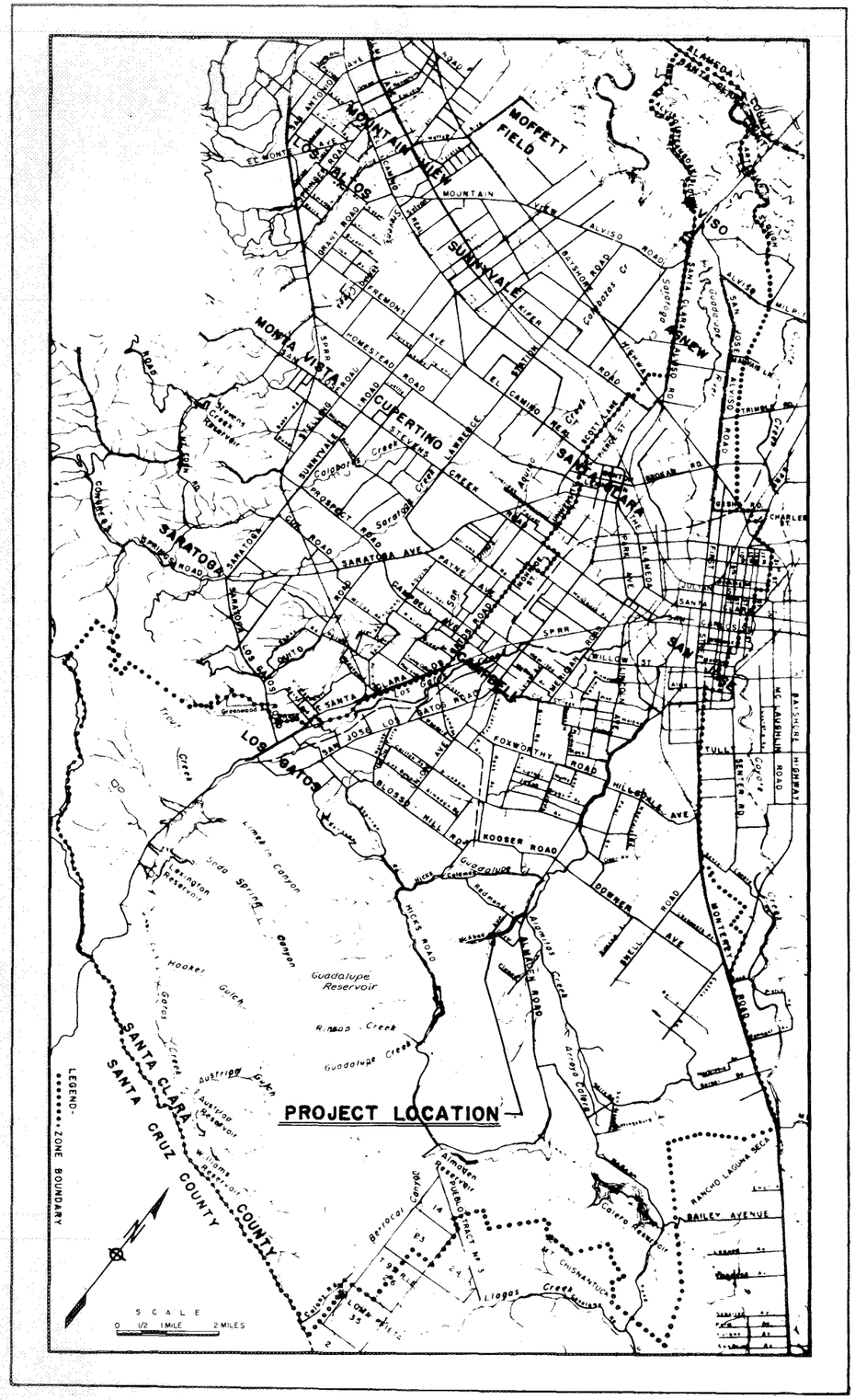
Based on these conclusions, it is recommended that the channel improvement of Golf Creek as proposed herein be approved and construction initiated as soon as possible in fiscal year 1963-64.

Submitted by:

George H. Prime
Head, Planning Division

Approved:

Lloyd C. Fowler
District Engineer



MAP AND GENERAL CONSTRUCTION PLANS

OF

ZONE C-1 (CENTRAL) PROJECT NO. 30013

GOLF CREEK

SANTA CLARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRIC

SANTA CLARA COUNTY, CALIFORNIA

Project Approv

Donald K

Manag

Date: March 1,

Reach 1 — Earth Channel
Reach 2 — Double 10'x6' Culv.
Reach 3 — Earth Channel
Reach 4 — EXIST. CULV.
Reach 5 — Earth Channel

Sta. 0-60
Beginning of Project

CREEK

ALAMITOS

Transition into Alamitos Cr. and rip-rap confluence.

0+00

55'

Install Double 10'x 6' Box Culvert (Shaded portion by others.)

Road

Existing Almaden Expressway

FUTURE ALMADEN EXPRESSWAY

135'

55'

To be abandoned.

5%

R=140'

Curve radii shown are on ℄ of proposed channel alignment.

Replace exist. timber bridge with farm bridge.

Existing Golf Creek

R=355'

Rip Rap outside of Curve from BC. to EC.

Note:
Remove all trees within R/W

0 50 100 200 300
SCALE

55' R/W
Sta. 3+00 to 15+50
20'
21'
10' Fill Esmt.
Taper levee to exist. ground.
Exist. ground surface. (Levee Reach)
Varies 8' to 10'
3:1
3:1
Sack rip-rap between Sta. 5+20 and Sta. 7+40
4'
12'

TYPICAL SECTION
REACHES 1 and 3
(Looking Downstream)

STA. 30+00 MATCH LINE SHEET 3

Exist. irrigation stan
(Relocate irrigation
necessary.)
Install farm bridge a
exist. ford.

55'
R/W
R/W
25'

Future 90' R/W

REDMOND AVENUE

Exist. well & pump.

R=200

Replace exist. foot bridge.

R=350

Barn

Exist. private power line Relocate and raise.

Exist. ditch

Install transitions and floor at exist. culvert. Provide outfall for exist. ditch in S.W. wingwall.

Basis of Elevation
U.S.G.S. B.M. 68 HJH-194
Located in existing North
of Greystone Creek culvert

220
210
200

Sta. 0+60 Beginning of Project
℄ Alamitos Creek
Install Double 10'x 5' Box Culvert
℄ Future Almaden Expressway
Exist. ground line.
Proposed top of levee. (See Typical Section)
S=0.0032
Replace exist. timber bridge
Existing Creek Bottom
Replace exist. foot bridge
Sta. 20+00 Grade Break
Install floor and transitions at exist. culvert. Provide outfall for exist. ditch in S.W. wingwall.
℄ Redmond Ave.
Exist. ground line.
S=0.0048

0 5 10 15 20 25

MAP AND GENERAL CONSTR
ZONE C-1 (CENTRAL) PR
GOLF CRE
SANTA CLARA COUNTY FL
AND
WATER CONSERVATIO

ENGINEERING APPROVAL
George W. Parmenter
SUPV. ENGINEER R.C.E. No. 6082

FINAL APPROVAL
Lloyd C. Fowler
DISTRICT ENGINEER R.C.E. No. 10822

DE
DR
CH
M

Reach 5
Earth Channel

Existing Golf Creek
(To be backfilled by others.)

Reach 6

Extension Avenue 2

Double 8'x6' Culvert by others. Depress curb and sidewalk to admit gutter flow into channel on downstream end.

Reach 7
Earth Channel

Exist. Golf Creek
(To be backfilled by others.)

Tract 3186

R=205'
R=150'
55'
45°
50'
42" Storm Drain by others.
60'
Future Culligan
R=725'
R=675'
Install Check Dam (Stage 2)
℄ R=694'
50'
40'
Prop. Line
Dwyer Rd. Extension (Private Road)
R=325'
R=275'
R=294'
55'
R=225'
Remnants of burned Bridge
MATCH LINE Sheet 4
Replace exist. farm bridge.
Sta. 60+00
40' McAbee Road Exist. R/W

Rip-Rap outside of curve from B.C. to E.C.

℄
35'
R=285'
R=235'
R/W
R/W
R=230'
Exist. stand pipe. (See note sh. 2)
Sta. 30+00 Match Line Sheet 2

55' R/W
21'
20'
Access Road
S=1½:1
Varies 8' to 10'
S=1½:1
4'
12'
Rip-Rap turn from Sta. 33+40 to Sta. 40+20

TYPICAL SECTION
(Reach 5)

50'
Access Road
10'
19'
S=1½:1*
Channel ℄
Varies 7 to 11'
S=1½:1*
10'

TYPICAL SECTION
(Reach 7)

* Steepen side slope when depth exceeds 9.3'

0 50 100 200 300
SCALE

240
230
220
210

Sta. 30+00 Match Line - Sheet 2
S=0.0045
Exist. Creek Bottom
Double 8'x6' Box Culvert
S=0.0046
Future Culligan Avenue
Stage 2 Channel Bottom
Sta. 48+00 Stage 2 Check Dam
S=0.0020
Stage 1 Channel Bottom
S=0.004
Exist Creek Bottom
S=0.004
Exist Ground Surface
S=0.004

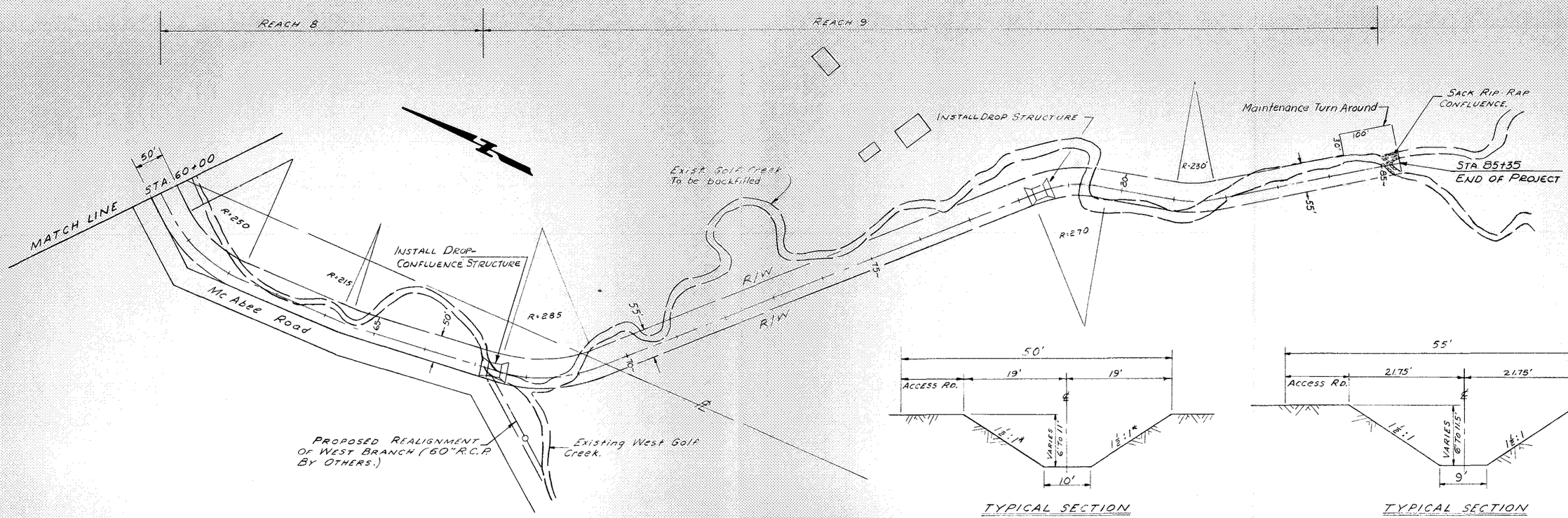
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MAP AND GENERAL CONSTR
ZONE C-1 (CENTRAL) PRO
GOLF CREE
SANTA CLARA COUNTY FL
AND
WATER CONSERVATION

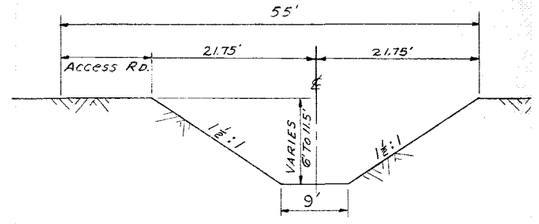
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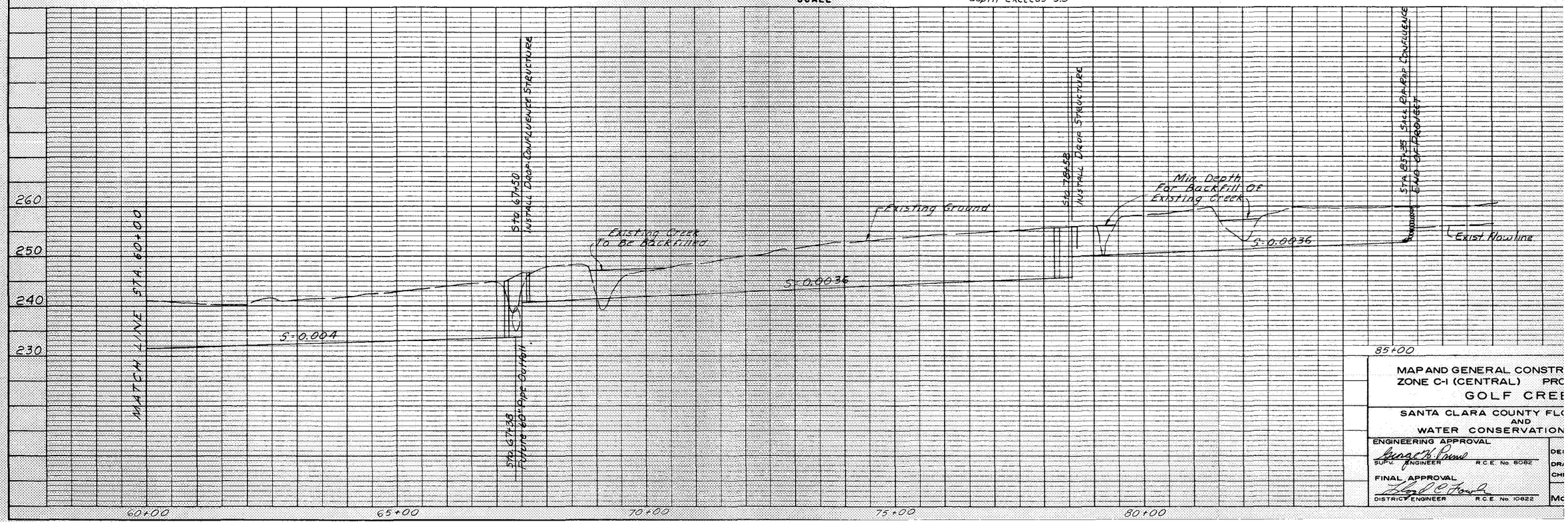
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CH
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TYPICAL SECTION
REACH 8
* Steepen side slopes when depth exceeds 9.3'



TYPICAL SECTION
REACH 9



MAP AND GENERAL CONSTR
ZONE C-1 (CENTRAL) PRO
GOLF CREE

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